

## CLAIMS

1. A method of verifying a connection between a subscriber station and a network wherein a gateway resides intermediate the subscriber station and the network, the method comprising the steps of:
  - 5 introducing a tester into the connection;
  - remotely instructing the tester to perform at least one connectivity test between the gateway and the network; and
  - generating an output reporting a result of the at least one connectivity test.
2. The method according claim 1 wherein the gateway is a DSLAM.
- 10 3. The method according to claim 2 wherein the portion of the connection between the gateway and the subscriber station includes a copper twisted pair.
4. The method according to claim 1 wherein the network is a proprietary network belonging to an internet service provider.
- 15 5. The method according to claim 1 wherein the network is the Internet and the portion of the connection between the gateway and network is a backhaul.
6. The method according to claim 1 wherein the tester is introduced via a remote instruction.
7. The method according to claim 1 wherein the tester is introduced into the connection at the gateway.
- 20 8. The method according to claim 6 wherein the gateway is a DSLAM at a telephone central office and the tester is introduced using a manual connection.
9. The method according to claim 1 further comprising the step of remotely instructing the tester to perform at least one additional connectivity test between the gateway and

the subscriber station and wherein the report includes a result of the at least one additional connectivity test.

10. The method according to claim 9 wherein the at least one additional connectivity test is a metal test of a copper twisted pair that forms at least part of the connection between the 5 gateway and the subscriber station.

11. The method according to claim 1 wherein the remote instructions originate from a verification host connected to the tester and the report is outputted to the verification host.

12. The method according to claim 11 wherein the network is the Internet.

13. The method according to claim 11 wherein the network is a proprietary network 10 belonging to an internet service provider.

14. The method according to claim 13 wherein the at least one connectivity test comprises “pinging” the tester from the host via the Internet.

15. The method according to claim 13 wherein the report includes ping statistics delivered to the host.

15 16. The method according to claim 12 wherein the verification host is connected to the tester via a virtual link through the Internet.

17. The method according to claim 16 wherein the subscriber station has a dynamic IP address and further comprising the steps of, after the introducing step:

remotely providing the dynamic IP address to the tester via a DHCP server;

20 sending the dynamic IP address from the tester to the host via the Internet.

18. The method according to claim 11 wherein the verification host is connected to the tester via a link independent of the network.

19. The method according to claim 16 wherein the subscriber station has a static IP address and further comprising the step of remotely providing the static IP address to the tester via the link.

20. A system for verifying a connection between a subscriber station and a network 5 wherein a gateway resides intermediate the subscriber station and the network, the system comprising:

means for introducing a tester into the connection;

means for remotely instructing the tester to perform at least one connectivity test between the gateway and the network; and

10 means for generating an output reporting a result of the at least one connectivity test.

21. A system for verifying a connection comprising:

a subscriber station;

15 a network connected to the subscriber station via a gateway, the gateway operable to translate communications between the subscriber station and the network;

a tester for connection into the network, the tester operable to receive remote instructions to perform at least one connectivity test over at least a portion of a connection spanning the subscriber station and the network; and,

20 a host connected to the tester for remotely instructing the tester to perform the at least one connectivity test and to receive reports thereof from the tester.

22. The system according to claim 21 wherein the gateway is a DSLAM.

23. The system according to claim 22 wherein the portion of the connection between the gateway and the subscriber station includes a copper twisted pair.

24. The system according to claim 21 wherein the network is the Internet and the portion of the connection between the gateway and network is a backhaul.

25. The system according to claim 21 wherein the tester is further operable to be selectively connected to and disconnected from the network via a remote instruction from the host.

5 26. The system according to claim 21 wherein the tester is operable to be selectively connected to and disconnected from the network via a manual connection.

27. The system according to claim 25 wherein the gateway is a DSLAM at a telephone central office and the tester is connected to the DSLAM using a manual connection.

10 28. The system according to claim 25 wherein the connectivity test includes a metal between the gateway and the subscriber station and wherein the report includes a result of the metal test.

29. The system according to claim 21 wherein the network is the Internet.

30. The system according to claim 28 wherein the at least one connectivity test

15 comprises "pinging" the tester from the host via the Internet.

31. The system according to claim 29 wherein the report includes ping statistics delivered to the host.

32. The system according to claim 28 wherein the verification host is connected to the tester via a virtual link through the Internet.

20 33. The system according to claim 28 further comprising a DHCP server operable to assign an IP address to the subscriber station and further operable to assign an IP address to the tester when the tester is introduced into the connection, the tester further operable to send the dynamic IP address from the tester to the host via the Internet.

34. The system according to claim 21 wherein the verification host is connected to

25 the tester via a link independent of the network.

35. The system according to claim 33 wherein the subscriber station has a static IP address and wherein the host is further operable to providing the static IP address to the tester via the link.

36. A method of remotely verifying a connection between a subscriber station and a network wherein a gateway resides intermediate the subscriber station and the network, the method comprising the steps of:

remotely triggering the introduction of a tester into the connection, the tester operable to perform link and connectivity tests;

performing a test of a link between the gateway and the subscriber station;

10 performing a connectivity test between the gateway and the network; and

reporting the status of the connection to a remote location.

37. A system for remotely verifying a connection between a subscriber station and a network wherein a gateway resides intermediate the subscriber station and the network, the system comprising:

15 a remote control terminal;

a tester coupled remotely to the remote control terminal and operable to be introduced into the connection and controlled by the remote control terminal; the tester operable to receive a connection test message from the remote control terminal and in response conduct at least one of: a test of a link between the gateway and the subscriber station and a test between the gateway and the network; the tester further operable to report results of the tests; and

20 a remote reporting terminal coupled remotely to the tester and operable to receive and process the results of the tests.

38. A method of remotely verifying a connection between a subscriber station and a network wherein a gateway resides intermediate the subscriber station and the network, the method comprising the steps of:

remotely triggering a tester to be introduced into the connection;

5 instructing the tester to perform a test of a link between the gateway and the subscriber station;

instructing the tester to perform a connectivity test between the gateway and the network; and

receiving and reporting of the status of the connection.

10 39. An apparatus for controlling verification of a connection between a subscriber station and a network from a remote location, wherein a gateway resides intermediate the subscriber station and the network, the apparatus comprising:

an interface operable to be coupled to a tester;

15 a processing unit operable to instruct the tester to be introduced into the connection and further operable to conduct a test of a link between the gateway and the subscriber station, the processing unit further operable to instruct the tester to conduct a connectivity test between the gateway and the network and report of the status of the connection; the processing unit further operable to receive and output the report of the status of the connection.

20 40. A test apparatus for remotely verifying a connection between a subscriber station and a network wherein a gateway resides intermediate the subscriber station and the network, the test apparatus comprising:

a first interface operable to be coupled to a remote control terminal;

a second interface operable to introduce the tester to the connection; and

5 a processing unit operable to receive connection test messages from the remote control terminal and, upon reception of a connection test message, further operable to conduct a test of a link between the gateway and the subscriber station, conduct a connectivity test between the gateway and the network; and transmit a report of the status of the connection to a remote location.

41. A method of remotely verifying layer 3 connectivity for a subscriber station wherein a gateway resides intermediate in a connection between the subscriber station and a layer 3 network, the method comprising the steps of:

remotely triggering a tester to be introduced into the connection;

10 performing a layer 3 connectivity test between the gateway and the network; and reporting the status of the layer 3 connectivity to a remote location.

42. A system for remotely verifying layer 3 connectivity for a subscriber station wherein a gateway resides intermediate in a connection between the subscriber station and a layer 3 network, the system comprising:

15 a remote control terminal;

a tester coupled remotely to the remote control terminal and operable to be introduced into the connection and controlled by the remote control terminal; the tester operable to receive a connectivity test message from the remote control terminal and in response conduct a layer 3 connectivity test between the gateway and the network, and report the results of the connectivity test; and

20 a remote reporting terminal coupled remotely to the tester and operable to receive and process the results of the connectivity test.

43. A method of verifying a connection between a subscriber station and a network wherein a gateway operated by a service provider resides intermediate the subscriber station and the network, the method comprising the steps of:

determining that a problem exists with the connection;

introducing a tester controllable by the service provider into the connection;

instructing the tester to perform a test of a link between the gateway and the subscriber station;

5 repairing the link if the link test fails and terminating the method if the problem is resolved;

if the problem remains unresolved, instructing the tester to perform a connectivity test between the gateway and the network;

repairing the gateway if the connectivity test fails;

10 44. A tester introducible to a connection spanning a subscriber station, a gateway and a network comprising:

an interface for introducing the tester to the connection;

a processing unit operable to receive remote instructions to perform at least one connectivity test over at least a portion of the connection, the processing unit

15 further operable to output results of the at least one connectivity test.

45. A verification host for conducting a remote test of a connection spanning a subscriber station, a gateway and a network via a tester introduced into the connection, the tester operable to receive remote instructions from the host and operable to perform at least one connectivity test over at least a portion of the connection network, the host comprising:

20 an interface for remotely connecting to the tester via a link

an input device for receiving input from a user representing instructions to the tester to perform the at least one connectivity test;

a processing unit for receiving the input and relaying the instructions to the tester via the interface and the link; the processing unit also for receiving results of the connectivity test from the tester via the interface; and,

an output device for presenting the results to the user.